



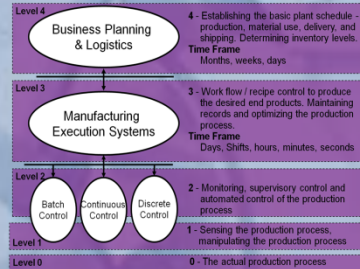
**MANUFACTURING EXECUTION SYSTEM  
AT CARLSBERG BREWERIES**

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**What is a Manufacturing Execution System?**

A Manufacturing Execution System is a dynamic information system that drives effective execution of manufacturing operations. Using current and accurate data, MES guides, triggers and reports on plant activities as events occur. MES is a set of functions that manages production operations from the point of order release into manufacturing to the point of product delivery of finished goods.

On the right: The Instrument Society of America S95 – Defines Level 3 – Manufacturing Execution Systems



**Why did Carlsberg Breweries Europe decide to implement a Standardized MES?**

The short answer is to **Make More Money**. Carlsberg already had an initiative running called Production Excellence. Within this program Carlsberg was using Best Practice Sharing across the breweries in Europe to improve performance. The teams soon realized that they lacked data and information to make comparisons effective. A myriad of systems were providing information and they were not connected into the whole business process.

Carlsberg decided to launch a Business Standardization Program which will implement a common SAP/ERP template across all their breweries in Europe. The core design for the MES layer covers the following:

- Brewing & Processing
- Filling & Packaging
- Utilities – Environmental
- In-Line and At-Line Quality
- Integration with ERP/SAP
- Integration with Controls/SCADA

**Did Carlsberg Make More Money?**

The answer is yes, and the improvements were so significant that they were reported to the shareholders publicly:

- Sales increased by 1.5% due to better response to demand, especially demand due to special marketing campaigns, weather changes and sports campaigns
- Gross Margins increased in addition by 1.2% due to the real-time accurate data provided from the Filling & Packaging Lines on most profitable packaging type
- Ratio of Own Downtime on all lines has reduced from 28% to 13%
- Can material loss has reduced from 1.6% to 0.72%
- Utilization of Canning lines has increased by 15%

**How did Carlsberg do it?**

With an integrated ERP/MES/Controls solution providing detailed reports for action and embedding improvements permanently – Sticky Lean.

**Filling & Packaging Reports**

**Northampton Reports**

Line	Start	End	Volume	Loss	Efficiency
Can Line 1	08:00	12:00	15000	100	95%
Can Line 2	08:00	12:00	15000	100	95%

**Total Downtime per Week**

**Filter Performance**

Filter	Flow	Pressure	Temp	Status
F1	1000	1.2	15	OK
F2	1000	1.2	15	OK

**Brewing & Processing Reports**

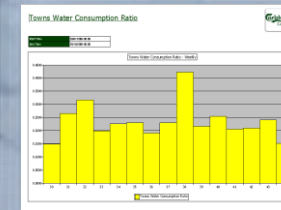
**Yeast Report**

Start date	End date	Yield	Loss
01-01-2010	31-12-2010	95%	5%

**Yeast propagation phase**

Phase	Start	End	Yield
Yeast propagation	01-01-2010	31-12-2010	95%

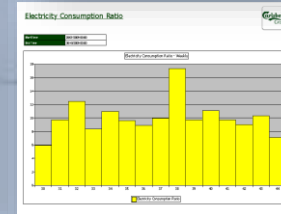
**Utilities Environment Reports**



**In Line & At Line Quality Reports**

**Quality Control**

Tables and charts showing quality metrics and control points.



**Can Analysis - Start Up**

Tables and charts showing start-up analysis for can production.

Examples

